

DERWENT-ACC-NO: 2000-276526

DERWENT-WEEK: 200024

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TITLE: Ceiling fan with air cleaner has generator that supplies high voltage to electrodes of air cleaner to produce anion which is circulated in room by fan blade

----- KWIC -----

Basic Abstract Text - ABTX (1):

NOVELTY - An air cleaner (7) is attached to the fan with blades which is driven by a rotor. The air cleaner has cylindrical electrode (21) and acicular electrode. A high voltage is applied to the acicular and cylindrical electrodes by a generator and anion is formed inside cylindrical electrode which is directed through vent holes of air cleaner.

Basic Abstract Text - ABTX (2):

DETAILED DESCRIPTION - The acicular electrode is attached near the air inlet of cylindrical electrode. A high voltage generator (23) is provided near the acicular electrode. Vent holes (13) are provided in air cleaner.

Basic Abstract Text - ABTX (3):

USE - Ceiling fan with air cleaner machine to remove smoke, bad odor, dust and to condition the room.

Basic Abstract Text - ABTX (5):

DESCRIPTION OF DRAWING(S) - The figure shows the perspective view of ceiling fan with air cleaner.

Basic Abstract Text - ABTX (8):

Cylindrical electrode 21

Title - TIX (1):

Ceiling fan with air cleaner has generator that supplies high voltage to electrodes of air cleaner to produce anion which is circulated in room by fan blade

Standard Title Terms - TTX (1):

CEILING FAN AIR CLEAN GENERATOR SUPPLY HIGH VOLTAGE ELECTRODE AIR CLEAN PRODUCE ANION CIRCULATE ROOM FAN BLADE

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CLAIMS

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[Claim(s)]

[Claim 1] The sealing fan with an air cleaner characterized by having two or more wings which were attached in head lining and attached in the rotation driving means which carries out the rotation drive of two or more wings, and this rotation driving means, and the air cleaner which is attached in said rotation driving means and made to generate an anion.

[Claim 2] Said air cleaner so that the tubed electrode which has the conductivity which uses one side as the inlet of air and the exhaust port of the air of another side, the needlelike electrode which attends the inlet of said air of this tubed electrode, and said tubed electrode may be added and said needlelike electrode may be subtracted Have a high-voltage generating means to impress the high voltage to two electrodes, and it turns to an exhaust port from the inlet of the air of said tubed electrode according to the corona discharge and Coulomb force which are produced by impression of the high voltage to said two electrodes. The sealing fan with an air cleaner according to claim 1 characterized by being what generates the air current containing an anion.

[Claim 3] The sealing fan with an air cleaner according to claim 1 or 2 characterized by coming to add a lighting system further.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a sealing fan with an air cleaner especially about the sealing fan who it is attached [ fan ] in head lining and circulates indoor air.

[0002]

[Description of the Prior Art] A sealing fan is its simple substance, or is used combining lighting fitting, and he circulates indoor air, maintaining a decorative function, the cold air at the time of air conditioning and the warm air at the time of heating are made to equalize in the room, and it contributes to raising air conditioning effectiveness and heating effectiveness. Since this kind of sealing fan has the strong interior-element, he is attached in head lining of the place which is comparatively conspicuous also in the room, for example, a center, in many cases.

[0003]

[Problem(s) to be Solved by the Invention] However, since indoor air is only circulated, these are made diffused all over the room and there is no ventilation function when the smoke of dust, dust, and a cigarette etc. is floating in air, the conventional sealing fan who mentioned above has the problem of becoming the cause of generating, such as a pain of a throat, and a weir, \*\*\*\*.

[0004] This invention was made in view of such a point, and it aims at offering the sealing fan with an air cleaner who can remove the smoke of dust, dust, and a cigarette etc. effectively, maintaining the function of sealing fan original to raise air conditioning effectiveness and heating effectiveness.

[0005]

[Means for Solving the Problem] This invention is characterized by having two or more wings which were attached in head lining and attached in the rotation driving means which carries out the rotation drive of two or more wings, and this rotation driving means, and the air cleaner which is attached in said rotation driving means and made to generate an anion.

[0006] Since the air cleaner which makes the rotation driving means of the wing which constitutes a sealing fan generate an anion is attached according to this invention, by the sealing fan, an anion is spread indoors, and this anion will catch indoor dust, dust, smoke, pollen, a smell, etc. effectively, and will move to a floor. Consequently, the air conditioning by the sealing fan and the improvement function in heating effectiveness, and an air clarification function can be satisfied to coincidence, and it becomes possible to offer a very comfortable life space.

[0007] In addition, so that the tubed electrode which has the conductivity which uses one side as the inlet of air and the exhaust port of the air of another side as an air cleaner, the needlelike electrode which attends the inlet of said air of this tubed electrode, and said tubed electrode may be added and said needlelike electrode may be subtracted It can have a high-voltage generating means to impress the high voltage to two electrodes, and what generates the air current which contains an anion towards an exhaust port from the inlet of the air of said tubed electrode according to the corona discharge produced by impression of the high voltage to said two electrodes and Coulomb force can be used.

[0008] If such an air cleaner is used, in order not to use a motor fan etc. for generating the air current

containing an anion, there is an advantage that there is no generating of the noise.

[0009]

[Embodiment of the Invention] Hereafter, the gestalt of desirable implementation of this invention is explained with reference to a drawing. Drawing 1 is the perspective view showing the sealing fan with an air cleaner concerning one example of this invention. The arm 3 is hung through the flange 2 by head lining 1, and the sealing fan body 4 which is a rotation driving means is attached at the tip of this arm 3 at it. The sealing fan body 4 holds the rotation mechanical component which is not illustrated inside, and the end face of four wing frames 5 is combined with this rotation mechanical component. From lower limit opening of the sealing fan body 4, a projection is attached in a radial and, as for the tip side of the wing frame 5, the wing 6 is attached outside at this point, respectively.

[0010] The air clarification unit 7 is attached in the lower limit of the sealing fan body 4. As shown in drawing 2, the air clarification unit 7 stores 1 or two or more bodies 11 of an air cleaner in the interior, and carries out the regurgitation of the anion airstream generated by it outside from the ion emission opening 13 of the covering 12 bottom. the sealing fan body 4 of the upper part of covering 12 -- in addition, wind direction -- a circuit changing switch 14, the airflow accommodation switch 15, and a main switch 16 are formed, and the neon glow lamp 17 grade is attached in covering 12.

[0011] The body 11 of an air cleaner consists of a cylindrical electrode 21 which made the direction of a medial axis the vertical direction, a needlelike electrode 22 arranged so that upper limit opening of this cylindrical electrode 21 may be attended, and a high-voltage transformer assembly 23 which impresses the high voltage among these two electrodes, as a cross section is shown in drawing 2. Both the cylindrical electrode 21 and the needlelike electrode 22 are formed with titanium alloys, such as titanium oxide, and he is trying to secure a semipermanent life by this. In addition, although only one body 11 of an air cleaner is illustrated, in fact, each ion emission opening 13 is made to correspond to the air clarification unit 7, and it is equipped with about four bodies 11 of an air cleaner here.

[0012] if the about [ DC7,000-8,000V ] high voltage is now impressed between two electrodes -- between the upper limit edge of the cylindrical electrode 21 (+), and the points of the needlelike electrode 22 (-) -- corona discharge -- generating -- between electrons -- colliding -- the wind pressure of wind-speed about 2.0 m/sec occurs. An anion occurs in coincidence by the photocatalyst phenomenon by the titanium oxide of an electrode material (about 2 million pieces/(cc)), and this is emitted to it outside through the ion emission opening 13.

[0013] Externally, since the sealing fan is started, the anion style emitted outside is equally diffused even in all the corners of the room. The diffused anion collects dust for the pollen to 2.0-0.001 micrometers harmful to the body, Phung of ticks, the smoke of a cigarette, etc. effectively, and also demonstrates power to deodorization of a kitchen garbage, new synthetic building materials, etc. Since the filter is not being used for the body 11 of an air cleaner, its maintenance of exchange etc. is unnecessary.

[0014] Drawing 3 is the perspective view showing the example which added the globe lamp 8 as a lighting system to the sealing fan with an air cleaner who mentioned above. Like this example, it becomes possible by combining a sealing fan and a lighting system to raise interior nature and functionality more.

[0015] Drawing 4 is drawing for explaining the flow of the air at the time of air conditioning of the sealing fan of this invention, and heating. As shown in this drawing (a) at the time of air conditioning, a wind is sent downward from a top so that those the cold which accumulated downward is under a sealing fan may not be asked directly. An anion contacts directly the dust with which the bottom of the room was covered at coincidence, and an effective dust collection function is realized. Moreover, as shown in this drawing (b) at the time of heating, a wind is sent upwards from the bottom so that those the pre-heating which accumulated upwards is under a sealing fan may not be asked directly. An anion contacts directly the dust and smoke which accumulated on the room at coincidence, and an effective dust collection function is realized.

[0016]

[Effect of the Invention] Since the air cleaner which makes the rotation driving means of the wing which

constitutes a sealing fan generate an anion is attached according to this invention as stated above By the sealing fan, an anion is spread indoors and this anion catches indoor dust, dust, smoke, pollen, a smell, etc. effectively. The air conditioning by the sealing fan and the improvement function in heating effectiveness, and an air clarification function can be satisfied to coincidence, and the effectiveness of becoming possible to offer a very comfortable life space is done so.

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TECHNICAL FIELD

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[Field of the Invention] This invention relates to a sealing fan with an air cleaner especially about the sealing fan who it is attached [ fan ] in head lining and circulates indoor air.

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[Translation done.]

JAPANESE

[JP,2000-074432,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

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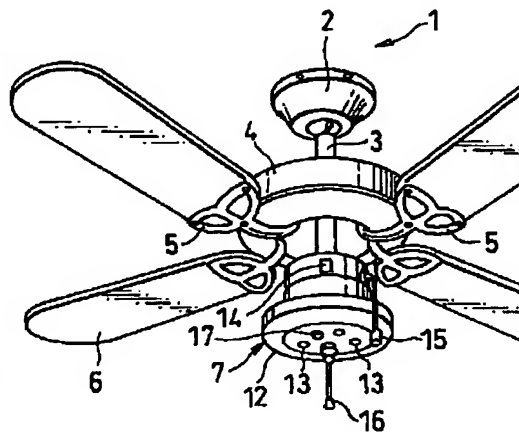
**PRIOR ART**

[Description of the Prior Art] A sealing fan is its simple substance, or is used combining lighting fitting, and he circulates indoor air, maintaining a decorative function, the cold air at the time of air conditioning and the warm air at the time of heating are made to equalize in the room, and it contributes to raising air conditioning effectiveness and heating effectiveness. Since this kind of sealing fan has the strong interior-element, he is attached in head lining of the place which is comparatively conspicuous also in the room, for example, a center, in many cases.

[Translation done.]

**Drawing selection**

**Representative drawing** 



[Translation done.]

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EFFECT OF THE INVENTION

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[Effect of the Invention] Since the air cleaner which makes the rotation driving means of the wing which constitutes a sealing fan generate an anion is attached according to this invention as stated above By the sealing fan, an anion is spread indoors and this anion catches indoor dust, dust, smoke, pollen, a smell, etc. effectively. The air conditioning by the sealing fan and the improvement function in heating effectiveness, and an air clarification function can be satisfied to coincidence, and the effectiveness of becoming possible to offer a very comfortable life space is done so.

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TECHNICAL PROBLEM

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[Problem(s) to be Solved by the Invention] However, since indoor air is only circulated, these are made diffused all over the room and there is no ventilation function when the smoke of dust, dust, and a cigarette etc. is floating in air, the conventional sealing fan who mentioned above has the problem of becoming the cause of generating, such as a pain of a throat, and a weir, \*\*\*\*.

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MEANS

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[Means for Solving the Problem] This invention is characterized by having two or more wings which were attached in head lining and attached in the rotation driving means which carries out the rotation drive of two or more wings, and this rotation driving means, and the air cleaner which is attached in said rotation driving means and made to generate an anion.

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[0007] In addition, so that the tubed electrode which has the conductivity which uses one side as the inlet of air and the exhaust port of the air of another side as an air cleaner, the needlelike electrode which attends the inlet of said air of this tubed electrode, and said tubed electrode may be added and said needlelike electrode may be subtracted. It can have a high-voltage generating means to impress the high voltage to two electrodes, and what generates the air current which contains an anion towards an exhaust port from the inlet of the air of said tubed electrode according to the corona discharge produced by impression of the high voltage to said two electrodes and Coulomb force can be used.

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the perspective view of the sealing fan with an air cleaner concerning one example of this invention.

[Drawing 2] It is the sectional view of the air clarification unit in this sealing fan.

[Drawing 3] It is the perspective view of the sealing fan with an air cleaner who added the lighting system concerning other examples of this invention.

[Drawing 4] It is drawing for explaining the wind at the time of this sealing fan's air conditioning, and heating.

[Description of Notations]

1 [ -- A sealing fan body, 5 / -- A wing frame, 6 / -- A wing, 7 / -- An air clarification unit, 8 / -- A globe lamp, 11 / -- The body of an air cleaner, 12 / -- Covering, 13 / -- Ion emission opening, 21 / -- A cylindrical electrode, 22 / -- A needlelike electrode, 23 / -- High-voltage transformer assembly. ] -- Head lining, 2 -- A flange, 3 -- An arm, 4

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[Translation done.]

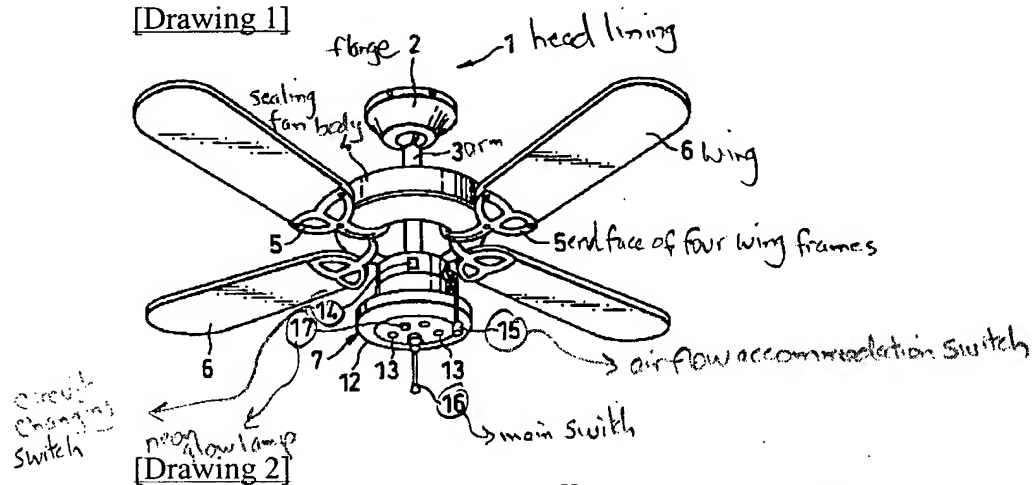
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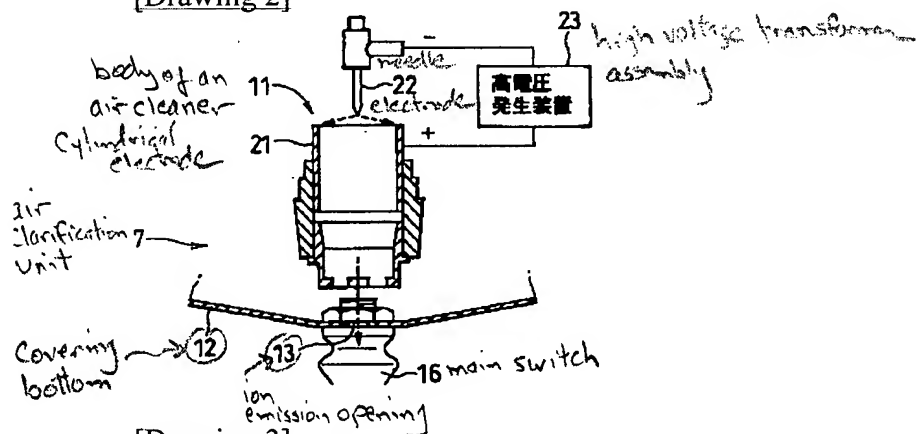
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## DRAWINGS

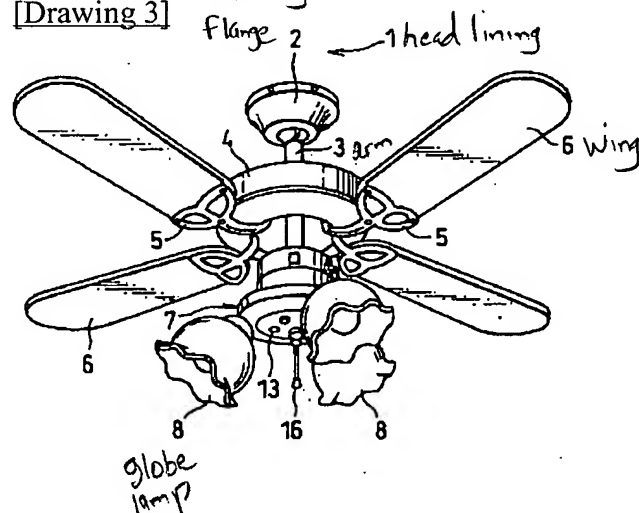
[Drawing 1]



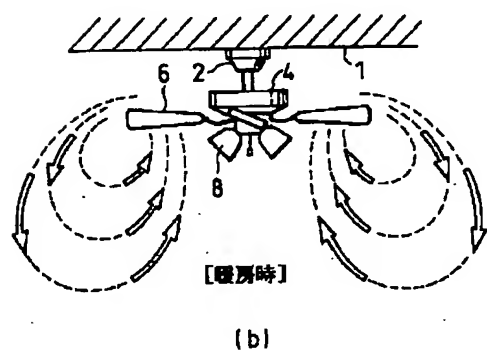
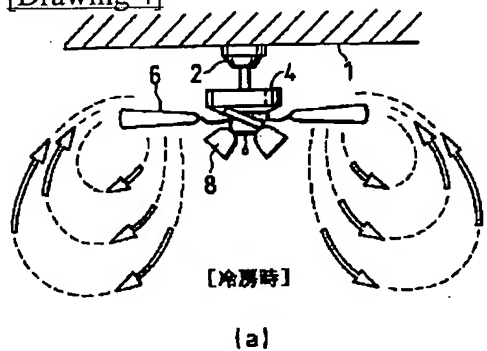
[Drawing 2]



[Drawing 3]



[Drawing 4]



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[Translation done.]

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(12) 公開特許公報 (A)

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(P2000-74432A)

(43) 公開日 平成12年3月14日 (2000.3.14)

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F 2 1 V 33/00		F 2 1 V 33/00	C 4 D 0 5 4
F 2 4 F 7/00		F 2 4 F 7/00	A

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(71) 出願人 000103633

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Fターム(参考) 3K014 PB04 RB00 RB03 RB05

3L056 BC06 BC07 BC09

4D054 AA13 BB04 BB15 EA01 EA11

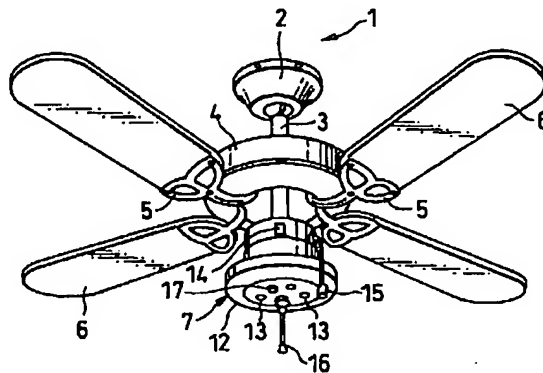
EA30

(54) 【発明の名称】 空気清浄機付きシーリングファン

(57) 【要約】

【課題】 冷房効率や暖房効率を高められるというシーリングファン本来の機能を維持しつつ、ほこり、塵、煙草の煙等を効果的に除去する。

【解決手段】 天井1に取り付けられて、複数の羽根6を回転駆動するシーリングファン本体4と、このシーリングファン本体4に取り付けられた複数の羽根6と、シーリングファン本体4に取り付けられてマイナスイオンを発生させる空気清浄ユニット7とを備えた。



## 【特許請求の範囲】

【請求項1】 天井に取り付けられて、複数の羽根を回転駆動する回転駆動手段と、

この回転駆動手段に取り付けられた複数の羽根と、  
前記回転駆動手段に取り付けられてマイナスイオンを発生させる空気清浄機とを備えたことを特徴とする空気清浄機付きシーリングファン。

【請求項2】 前記空気清浄機は、  
一方を空気の導入口、他方の空気の排出口とする導電性を有する筒状電極と、

この筒状電極の前記空気の導入口に臨む針状電極と、  
前記筒状電極がプラス、前記針状電極がマイナスとなるように、両電極に高電圧を印加する高電圧発生手段とを備え、前記両電極への高電圧の印加によって生じるコロナ放電とクーロン力とによって前記筒状電極の空気の導入口から排出口に向けて、マイナスイオンを含む気流を発生させるものであることを特徴とする請求項1記載の空気清浄機付きシーリングファン。

【請求項3】 照明装置を更に付加してなることを特徴とする請求項1又は2記載の空気清浄機付きシーリングファン。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】この発明は、天井に取り付けられて室内の空気を循環させるシーリングファンに関し、特に空気清浄機付きシーリングファンに関する。

## 【0002】

【従来の技術】シーリングファンは、それ単体で又は照明器具と組み合わせて用いられ、装飾的機能を保ちながら室内の空気を循環させて、冷房時の冷たい空気や暖房時の暖かい空気を部屋の中で均一化させて、冷房効率や暖房効率を高めるのに寄与する。この種のシーリングファンは、インテリア的な要素が強いので、部屋の中でも比較的目立つところ、例えば中央の天井に取り付けられることが多い。

## 【0003】

【発明が解決しようとする課題】しかし、上述した従来のシーリングファンは、室内の空気を循環させるだけであるから、空気中にほこり、塵、煙草の煙等が浮遊していると、これらを部屋中に拡散させることになり、換気機能がないために、のどの痛みやせき、たん等の発生の原因になるという問題がある。

【0004】本発明は、このような点に鑑みなされたもので、冷房効率や暖房効率を高められるというシーリングファン本来の機能を維持しつつ、ほこり、塵、煙草の煙等を効果的に除去することができる空気清浄機付きシーリングファンを提供することを目的とする。

## 【0005】

【課題を解決するための手段】本発明は、天井に取り付けられて、複数の羽根を回転駆動する回転駆動手段と、

この回転駆動手段に取り付けられた複数の羽根と、前記回転駆動手段に取り付けられてマイナスイオンを発生させる空気清浄機とを備えたことを特徴とする。

【0006】本発明によれば、シーリングファンを構成する羽根の回転駆動手段にマイナスイオンを発生させる空気清浄機が取り付けられているので、シーリングファンによってマイナスイオンが室内に拡散され、このマイナスイオンが室内のほこり、塵、煙、花粉、におい等を効果的に捕捉して床へ移動することになる。この結果、シーリングファンによる冷房及び暖房効率向上機能と、空気清浄機能とを同時に満足させることができ、極めて快適な生活空間を提供することが可能になる。

【0007】なお、空気清浄機としては、一方を空気の導入口、他方の空気の排出口とする導電性を有する筒状電極と、この筒状電極の前記空気の導入口に臨む針状電極と、前記筒状電極がプラス、前記針状電極がマイナスとなるように、両電極に高電圧を印加する高電圧発生手段とを備え、前記両電極への高電圧の印加によって生じるコロナ放電とクーロン力とによって前記筒状電極の空気の導入口から排出口に向けて、マイナスイオンを含む気流を発生させるものを用いることができる。

【0008】このような空気清浄機を用いれば、マイナスイオンを含む気流を発生させるのに、モータファン等を用いないため、騒音の発生がないという利点がある。

## 【0009】

【発明の実施の形態】以下、図面を参照してこの発明の好ましい実施の形態について説明する。図1は、この発明の一実施例に係る空気清浄機付きシーリングファンを示す斜視図である。天井1には、フランジ2を介してアーム3が吊り下げられており、このアーム3の先端に回転駆動手段であるシーリングファン本体4が取り付けられている。シーリングファン本体4は、内部に図示しない回転駆動部を収容し、この回転駆動部に4つの羽根フレーム5の基端が結合されている。羽根フレーム5の先端側は、シーリングファン本体4の下端開口から外側に放射状に突出し、この先端部にそれぞれ羽根6が取り付けられている。

【0010】シーリングファン本体4の下端には、空気清浄ユニット7が取り付けられている。空気清浄ユニット7は、図2に示すように、内部に1又は複数の空気清浄機本体11を格納し、それによって生成されたマイナスイオン空気流を、そのカバー12の下側のイオン放出口13から外部に吐出するようになっている。カバー12の上部のシーリングファン本体4には、このほかに、風向切替スイッチ14、風量調節スイッチ15及びメインスイッチ16が設けられ、カバー12にはネオンランプ17等が取り付けられている。

【0011】空気清浄機本体11は、図2に断面を示すように、中心軸方向を上下方向とした円筒状電極21と、この円筒状電極21の上端開口部に臨むように配置



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された針状電極22と、これら両電極間に高電圧を印加する高電圧発生装置23とから構成されている。円筒状電極21及び針状電極22は、共に酸化チタン等のチタン合金で形成され、これにより半永久的な寿命を確保するようにしている。なお、ここでは、1つの空気清浄機本体11しか図示していないが、実際には、空気清浄ユニット7には、各イオン放出口13に対応させて4つ程度の空気清浄機本体11が装着されている。

【0012】いま、両電極間にDC7,000～8,000V程度の高電圧を印加すると、円筒状電極21(+)の上端縁部と針状電極22(-)の先端部との間でコロナ放電が発生し、電子間のぶつかりによって風速約2.0m/secの風圧が発生する。同時に、電極材料の酸化チタンによる光触媒現象でマイナスイオンが発生(約200万個/cc)し、これがイオン放出口13を介して外部に放出される。

【0013】外部では、シーリングファンが起動されているので、外部に放出されたマイナスイオン流は、部屋の隅々にまで均等に拡散される。拡散されたマイナスイオンは、人体に有害な2.0～0.001 $\mu$ mまでの花粉やダニのフン、煙草の煙等を効果的に集塵するほか、生ゴミ、新建材などの消臭にも威力を発揮する。空気清浄機本体11は、フィルタを使用していないため、交換などのメンテナンスが不要である。

【0014】図3は、上述した空気清浄機付きシーリングファンに照明装置としてグローブランプ8を付加した例を示す斜視図である。この例のように、シーリングファンと照明装置とを組み合わせることで、よりインテリア性と機能性を高めることが可能になる。

【0015】図4は、この発明のシーリングファンの冷房時と暖房時の空気の流れを説明するための図である。冷房時には、同図(a)に示すように、下にたまった冷気がシーリングファンの下に居る人に直接当たらないよ

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うに、上から下に風を送る。同時に部屋の下にたまった塵にマイナスイオンが直接接触して効果的な集塵機能が実現される。また、暖房時には、同図(b)に示すように、上にたまった暖気がシーリングファンの下に居る人に直接当たらないように、下から上に風を送る。同時に部屋の上にたまった塵や煙にマイナスイオンが直接接触して効果的な集塵機能が実現される。

【0016】

【発明の効果】以上述べたようにこの発明によれば、シーリングファンを構成する羽根の回転駆動手段にマイナスイオンを発生させる空気清浄機が取り付けられているので、シーリングファンによってマイナスイオンが室内に拡散され、このマイナスイオンが室内のほこり、塵、煙、花粉、におい等を効果的に捕捉して、シーリングファンによる冷房及び暖房効率向上機能と、空気清浄機能とを同時に満足させることができ、極めて快適な生活空間を提供することが可能になるという効果を奏する。

【図面の簡単な説明】

【図1】 本発明の一実施例に係る空気清浄機付きシーリングファンの斜視図である。

【図2】 同シーリングファンにおける空気清浄ユニットの断面図である。

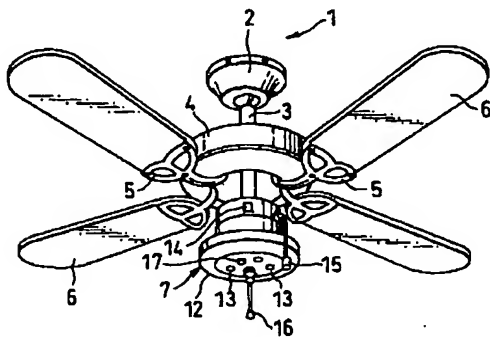
【図3】 本発明の他の実施例に係る照明装置を付加した空気清浄機付きシーリングファンの斜視図である。

【図4】 同シーリングファンの冷房時と暖房時の風向きを説明するための図である。

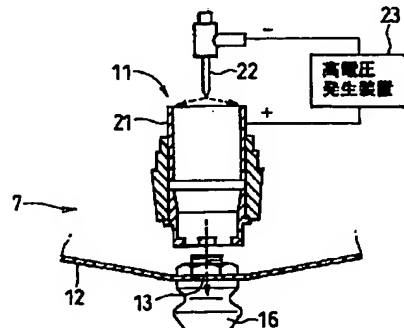
【符号の説明】

1…天井、2…フランジ、3…アーム、4…シーリングファン本体、5…羽根フレーム、6…羽根、7…空気清浄ユニット、8…グローブランプ、11…空気清浄機本体、12…カバー、13…イオン放出口、21…円筒状電極、22…針状電極、23…高電圧発生装置。

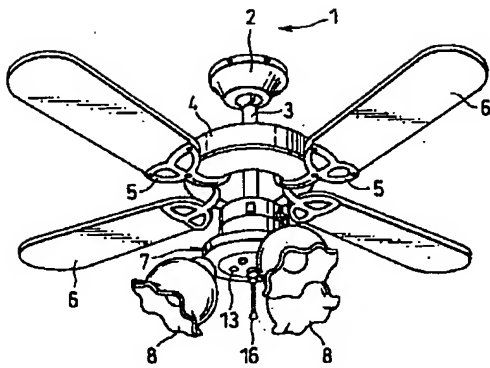
【図1】



【図2】



【図3】



【図4】

